

What is claimed is:

1. A semiconductor device comprising:

a die pad section having a surface and a back surface;

a first semiconductor chip having a surface on which a first electrode section is formed, and a back surface fixed to the surface of the die pad section;

a second semiconductor chip having a surface on which a second electrode section is formed, and a back surface fixed to the surface of the first semiconductor chip;

lead terminal sections respectively electrically connected to the first and second electrode sections; and

a resin encapsulating body that seals the die pad section, and the first and second semiconductor chips,

wherein an edge portion of the second semiconductor chip protrudes from an edge portion of the first semiconductor chip, and an edge portion of the die pad section protrudes from the edge portion of the first semiconductor chip.

2. A semiconductor device according to claim 1, wherein the edge portion of the die pad section further protrudes from the edge portion of the second semiconductor chip.

3. A semiconductor device according to claim 2, wherein the surface of the first semiconductor chip has first and second sides opposite to each other,

the surface of the second semiconductor chip has third and fourth sides opposite to each other,

the surface of the die pad section has fifth and sixth sides opposite to each other,

the fourth side of the second semiconductor chip protrudes from the second side of the first semiconductor chip, and

the sixth of the die pad section protrudes from the fourth side of the second semiconductor chip.

4. A semiconductor device according to claim 3, wherein the first and second semiconductor chips are substantially identical in shape and size.

5. A semiconductor device according to claim 4, wherein when the length between the first and second sides of the second semiconductor chip is defined as a chip length, the length of the sixth side of the die pad section, which protrudes from the fourth side of the second semiconductor chip, is less than or equal to one-fourth the chip length.

6. A semiconductor device according to claim 5, wherein the length of the fourth side of the second

semiconductor chip, which protrudes from the second side of the first semiconductor chip, is over 0.1 times half of the chip length and under 0.3 times half of the chip length.

7. A semiconductor device according to claim 6, wherein the thickness of each of the first and second semiconductor chips is over 0.02 times half of the chip length and under 0.06 times half of the chip length.

8. A semiconductor device according to claim 1, wherein the die pad section further includes a through section principally defined in a portion where the first and second semiconductor chips overlap each other.

9. A semiconductor device according to claim 8, wherein the through section is formed only at the portion where the first and second semiconductor chips overlap each other.

10 A semiconductor device according to claim 9, wherein the through section includes either of radial portions, bar-shaped portions, a cross-shaped portion or substantially circular portions.

11. A semiconductor device according to claim 1, wherein the die pad section and the first and second

semiconductor chips are substantially rectangular, adjacent two sides of the second semiconductor chip protrude from adjacent two sides of the first semiconductor chip respectively, and adjacent two sides of the die pad section protrude from the two sides of the first semiconductor chip respectively.

12. A semiconductor device according to claim 1, further comprising:

a third semiconductor chip having a surface on which a third electrode section electrically connected to the lead terminal section is formed, and a back surface fixed to the back surface of the die pad section, and

a fourth semiconductor chip having a surface on which a fourth electrode section electrically connected to the corresponding lead terminal section, and a back surface fixed to the surface of the third semiconductor chip,

wherein an edge portion of the fourth semiconductor chip protrudes from an edge portion of the third semiconductor chip and the edge portion of the die pad section protrudes from the edge portion of the third semiconductor chip.

13. A semiconductor device according to claim 1, further comprising a fifth semiconductor chip fixed to the first semiconductor chip together with the second

semiconductor chip.

14. A semiconductor device according to claim 13, wherein an edge portion of the fifth semiconductor chip protrudes from the edge portion of the first semiconductor chip.

15. A semiconductor device comprising:

a first semiconductor chip having a first surface and a second surface opposite to the first surface and on which a first electrode section is formed, said second surface having a first side and a second side opposite to the first side;

a second semiconductor chip having a third surface fixed onto the second surface, and a fourth surface opposite to the third surface and on which a second electrode section is formed, said fourth surface having a third side and a fourth side opposite to the third side;

a die pad section to which the first semiconductor chip is fixed, said die pad section having a first region to which the first surface is fixed, and a second region that protrudes from the second side;

lead terminal sections respectively electrically connected to the first and second electrode sections; and

a resin encapsulating body that seals the die pad section, and the first and second semiconductor chips, wherein the fourth side of the second semiconductor

chip protrudes from the second side of the first semiconductor chip.

16. A semiconductor device according to claim 15, wherein the die pad section further has a third region that protrudes from the first side, and the amount of protrusion of the third region is larger than the amount of protrusion of the second region.

17. A semiconductor device according to claim 15, wherein the second region further protrudes from the fourth side of the second semiconductor chip.

18. A semiconductor device according to claim 17, wherein the first and second semiconductor chips are substantially identical in shape and size.

19. A semiconductor device according to claim 18, wherein when the length between first and second sides of the second semiconductor chip is defined as a chip length, the length of the second region, which protrudes from the fourth side of the second semiconductor chip, is less than or equal to one-fourth the chip length.

20. A semiconductor device according to claim 19, wherein the length of the fourth side of the second semiconductor chip, which protrudes from the second side

of the first semiconductor chip, is over 0.1 times half of the chip length and under 0.3 times half of the chip length.

21. A semiconductor device according to claim 20, wherein the thickness of each of the first and second semiconductor chips is over 0.02 times half of the chip length and under 0.06 times half of the chip length.

22. A semiconductor device according to claim 15, wherein the die pad section further includes a through section principally defined in a portion where the first and second semiconductor chips overlap each other.

23. A semiconductor device according to claim 22, wherein the through section is formed only at the portion where the first and second semiconductor chips overlap each other.

24. A semiconductor device according to claim 23, wherein the through section includes either of radial portions, bar-shaped portions, a cross-shaped portion or substantially circular portions.

25. A semiconductor device according to claim 15, wherein the second surface of the first semiconductor chip further has a fifth side adjacent to the second side,

the fourth surface of the second semiconductor chip further has a sixth side adjacent to the fourth side,

the die pad section further has a fourth region that protrudes from the fifth side, and

the sixth side of the second semiconductor chip protrudes from the fifth side of the first semiconductor chip.

26. A semiconductor device according to claim 15, further comprising:

a third semiconductor chip having a fifth surface and a sixth surface opposite to the fifth surface and on which a third electrode section electrically connected to the corresponding lead terminal section is formed, said sixth surface having a seventh side, and

a fourth semiconductor chip having a seventh surface fixed onto the sixth surface, and an eighth surface opposite to the seventh surface and on which a fourth electrode section electrically connected to the corresponding lead terminal section is formed, said eighth surface having an eighth side,

wherein the die pad section further includes, on a surface opposite to a surface formed with the first and second regions, a fifth region to which the fifth surface is fixed, and a sixth region that protrudes from the seventh side, and

the eighth side of the fourth semiconductor chip

protrudes from the seventh side of the third semiconductor chip.

27. A semiconductor device according to claim 15, further comprising a fifth semiconductor chip fixed to the first semiconductor chip together with the second semiconductor chip.

28. A semiconductor device according to claim 27, wherein an edge portion of the fifth semiconductor chip protrudes from the second side of the first semiconductor chip.

29. A method of manufacturing a semiconductor device provided with a first semiconductor chip having a surface on which a first electrode section is formed, and a back surface opposite to the surface, a second semiconductor chip having a surface on which a second electrode section is formed, and a back surface opposite to the surface, a die pad section, lead terminal sections and a resin encapsulating body, said method comprising the following steps of:

fixing the back surface of the first semiconductor chip to the die pad section such that an edge portion of the die pad section protrudes from an edge portion of the first semiconductor chip;

fixing the back surface of the second semiconductor

chip to the surface of the first semiconductor chip such that an edge portion of the second semiconductor chip protrudes from the edge portion of the first semiconductor chip;

electrically connecting the first and second electrode sections to the lead terminal sections; and

sealing the first and second semiconductor chips and the die pad section with the resin encapsulating body.

30. A method of manufacturing a semiconductor device provided with a first semiconductor chip having a first surface and a second surface opposite to the first surface and on which a first electrode section is formed, said second surface having a first side and a second side opposite to the first side, a second semiconductor chip having a third surface and a fourth surface opposite to the third surface and on which a second electrode section is formed, said fourth surface having a third side and a fourth side opposite to the third side, a die pad section having a first region and a second region, lead terminal sections, and a resin encapsulating body, said method comprising the following steps of:

fixing the first surface of the first semiconductor chip to the first region of the die pad section such that the second region of the die pad section protrudes from the second side of the first semiconductor chip;

fixing the third surface of the second

semiconductor chip to the second surface of the first semiconductor chip such that the fourth side of the second semiconductor chip protrudes from the second side of the first semiconductor chip;

electrically connecting the first and second electrode sections to the lead terminal sections; and

sealing the first and second semiconductor chips and the die pad section with the resin encapsulating body.